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EXAMINER	
MOORE, IAN N	
ART UNIT	PAPER NUMBER
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Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No.	Applicant(s)	
	09/688,165	LINDBLOM ET AL.	
	Examiner	Art Unit	
	Ian N Moore	2661	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☐ Responsive to communication(s) filed on _____.

2a)☐ This action is **FINAL**. 2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) 1-20 is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) 1-20 is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☐ The drawing(s) filed on _____ is/are: a)☐ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☒ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08) Paper No(s)/Mail Date 4,5.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____.
5) ☐ Notice of Informal Patent Application (PTO-152)
6) ☐ Other: _____.

DETAILED ACTION

Claim Rejections - 35 USC § 102

The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

> A person shall be entitled to a patent unless –
>
> (b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

1. Claims 1, 2, 4-12, and 14-20 are rejected under 35 U.S.C. 102(b) as being anticipated by Manning (U.S. 5,909,427).

Regarding Claims 1 and 11, Manning'427 discloses apparatus and a method of operating a cell switch (see FIG. 1) comprising:

a first switch plane (see FIG. 1, Switch Control Module foreground 10) comprising a first switch core (see FIG. 1, Foreground switch fabric 26);

a second switch plane (see FIG. 1, Switch Control Module background 12) comprising a second switch core (see FIG. 2, Background switch fabric 126);

a sender switch port interface unit (see FIG. 1, Input of I/O module #1);

a receiver switch port interface unit (see FIG. 1, Output of I/O module #1);

wherein the sender switch port interface unit sends maintenance cells (see FIG. 2, and col. 5, lines 52 to col.6, lines 32; note that communication cell and the test cell are the maintenance cells.) to the receiver switch port interface unit via the first switch plane and the second switch plane (see FIG. 2, a Foreground first I/O serial data signal 40 towards the foreground switch fabric 26, and a background first I/O serial data signal 41 towards the background switch fabric; note that TSPP of the I/O module sends the maintenance/OAM

(Operation, Administration and Maintenance) cells to FSPP of I/O module), the maintenance cells being applied to the first switch plane and the second switch plane in a predetermined sequence (see FIG. 2 TSPP 28 and Serializer 32, col. 5, lines 52-65; note that communication cell is first provided to the serializer 32, then it is provided to the background switch via a background first I/O serial data signal 41. The same communication cell is provided to the TSPP 28, and then it is provided to the foreground switch via a Foreground first I/O serial data signal 40. Also, note that the test cell is also sent to both switch fabrics in similar arrangement. Thus, the maintenance/OAM cells are applied in a prearranged sequential order. See col. 6, lines 26-33);

to wherein the receiver switch port interface unit detects an erroneous switch plane when the maintenance cells from the sender switch port interface unit do not arrive in the predetermined sequence (see FIG. 2, Deserializer 34 and FSPP 30; see col. 6, lines 36-48; note that as described above TSPP of I/O module send a test packet to both foreground and background switch fabrics. FSPP 30 of I/O module detects an error/failure after performing the error checking on the received test cell. An error/failure occurs due to the failure/error in foregroud/backgournd switch fabric during transmission, and it results an invalid/improper/unexpected data (i.e. receiving/arriving out-of-sequence/unexpected test cell) in the test cell received at the output of I/O module. Also, note that communication cell is routed to/from I/O module from/to both foreground and background switch fabrics. Similarly the test cell must be routed to/from I/O module from/to both foreground and background switch fabrics.)

Regarding Claim 2 and 12, Manning'427 discloses wherein the predetermined sequence comprises maintenance cells applied to the first switch plane and the second switch plane in alternation (see FIG. 2 TSPP 28 and Serializer 32, col. 5, lines 52-65; note that communication cell is first provided to the serializer 32, then it is provided to the background switch via a background first I/O serial data signal 41. The same communication cell is provided to the TSPP 28, and then it is provided to the foreground switch via a Foreground first I/O serial data signal 40. Also, note that the test cell is also sent to both switch fabrics in similar arrangement. Thus, the maintenance/OAM cells are applied in a prearranged sequential order of fluctuation/alternation by sending first to the foreground and then to the background switches. See col. 6, lines 26-33).

Regarding Claim 4 and 14, Manning'427 discloses wherein the sender switch port interface unit sends a cycle of maintenance cells to the receiver switch port interface unit (see FIG. 2, TSSP 28 and FSSP 30; col. 5, lines 52 to col.6, lines 32; note that each I/O module is coupled to both switch fabrics, and the OAM cells are switched between I/O modules. Thus, one TSPP must be able to send a communication cell to FSPP of the I/O module#1 and a test cell to the other FSPP of I/O module#2. In particular, the OAM cells are transmitted/received between every input and output once every 5 milliseconds time cycle.), the cycle comprising:

plural sets of the predetermined sequence (see FIG. 2 TSPP 28 and Serializer 32, col. 5, lines 52-65; note that communication cell is first provided to the serializer 32, then it is provided to the background switch via a background first I/O serial data signal 41. The same communication cell is provided to the TSPP 28, and then it is provided to the foreground

switch via a Foreground first I/O serial data signal 40. Also, note that the test cell is also sent to both switch fabrics in similar arrangement; see col. 6, lines 26-33. Thus, two sets of OAM cells (i.e. one set consist of communication cells and the other set consists of test cells) are applied in a prearranged sequential order of fluctuation/alternation by sending first to the foreground and then to the background switches.), and

wherein at least a portion of the maintenance cell of one of the sets of the cycle is inverted with respect to a corresponding portion of the maintenance cell of another of the sets of the cycle (see col. 5, lines 55 to col.6, lines 32, note that initially communication cells must be send to both fabrics for bandwidth allocation set up and queries, and then test cells must be send in order to determine the failure/error. FIG. 2, col. 6, lines 16-32; a test cell must have an inverted code compare to a code of communication cell. Also, a cell switch is the ATM switch, which utilizes ATM cells formats; see col. 5, lines 15-19. Also, note that it is well known in the art that ATM standard header consists of payload type (PT) field where PT coding contains various coding formats for OAM cell in order to identify different types of OAM cells. Thus, it is clear that when a pair of OAM cells (i.e. communication and test cells) is transmitted to the foreground/background switch fabric, a different PT field code must be used (i.e. by inverting PT codes). Thus, at least a portion of communication cells is non-inverted, and at least a portion of test cell is inverted.)

Regarding Claim 5 and 15, Manning'427 discloses all aspects of the claimed invention set forth in the rejection of Claim 1,4,11 and 14, and further teaches wherein the cycle comprises two sets of the predetermined sequence of maintenance cells (see col. 5,

lines 35 to col. 6, lines 25, two sets of OAM cells (i.e. one set consist of communication cells and the other set consists of test cells) are applied in a prearranged sequential order of fluctuation/alternation by sending first to the foreground and then to the background switches. Thus, the a set of communication cells must be send to both foreground and background fabrics for communication set-ups, and then a set of test cells must be sent to both foreground and background fabrics for error/fault detection.

Regarding Claim 6 and 16, Manning'427 discloses wherein the receiver switch port interface unit detects an erroneous switch plane by performing error checking with respect to contents of a received maintenance cell (see col. 6, lines 1-48 and col.7, lines 6-22; note that FSPP of I/O module (i.e. at the output) determines/detects an error/failure in the switching fabric by performing CRC according to bits within each received test cell.)

Regarding Claims 8 and 18, Manning'427 discloses apparatus and method a cell switch comprising:

a switch plane (see FIG. 1, Switch Control Module foreground 10) comprising a switch core (see FIG. 1, Foreground switch fabric 26);

a sender switch port interface unit (see FIG. 1, Input of I/O module #1);

a receiver switch port interface unit (see FIG. 1, Output of I/O module #1);

wherein the sender switch port interface unit sends a pair of maintenance cells (see FIG. 2, and col. 5, lines 52 to col.6, lines 32; note that communication cell and the test cell are the maintenance/OAM cells.) to the receiver switch port interface unit via the switch

plane (see FIG. 2, a Foreground first I/O serial data signal 40 towards FSPP 30 via the foreground switch fabric 26);

a first maintenance cell of the pair (see FIG. 2, and col. 5, lines 52 to col.6, lines 32; a communication cell for the foreground switch) having a predetermined portion thereof inverted with respect to a corresponding portion of a second maintenance cell of the pair (see FIG. 2, col. 6, lines 16-32; a test cell must have an inverted code compare to a code of communication cell). Note that a cell switch is the ATM switch, which utilizes ATM cells formats; see col. 5, lines 15-19. Also, note that it is well known in the art that ATM standard header consists of payload type (PT) field where PT coding contains various coding formats for OAM cell in order to identify different types of OAM cells. Thus, it is clear that when a pair of OAM cells (i.e. communication and test cells) is transmitted to the foreground switch fabric, a different PT field code must be used (i.e. by inverting PT codes).

Regarding Claims 9 and 19, Manning'427 discloses a second switch plane (see FIG. 1, Switch Control Module background 12. Also, see col.4, lines 24-30, note that both foreground and background are interchangeable modules; thus, they must have the same functionality, and the disclosures that are applicable to foreground control module 10 is also applicable to background module 12.) through which the sender switch port interface unit also sends a second pair of maintenance cells (see FIG. 2, and col. 5, lines 52 to col.6, lines 32; note that communication cell and the test cell are the maintenance/OAM cells.) to the receiver switch port interface unit (see FIG. 2, a Background first I/O serial data signal 41 towards FSPP 30 the background switch fabric 126),

a first maintenance cell of the second pair (see FIG. 2, and col. 5, lines 52 to col.6, lines 32; a communication cell for background switch) having a predetermined portion thereof inverted with respect to a corresponding portion of a second maintenance cell of the second pair (FIG. 2, col. 6, lines 16-32; a test cell must have an inverted code compare to a code of communication cell). Note that a cell switch is the ATM switch, which utilizes ATM cells formats; see col. 5, lines 15-19. Also, note that it is well known in the art that ATM standard header consists of payload type (PT) field where PT coding contains various coding formats for OAM cell in order to identify different types of OAM cells. Thus, it is clear that when a pair of OAM cells (i.e. communication and test cells) is transmitted to the foreground switch fabric, a different PT field code must be used (i.e. by inverting PT codes).

Regarding Claims 10,7, 17 and 20, Manning'427 discloses an apparatus and method of operating a cell switch comprising:

a first switch plane (see FIG. 1, Switch Control Module foreground 10) comprising a first switch core (see FIG. 1, Foreground switch fabric 26);

a second switch plane (see FIG. 1, Switch Control Module background 12) comprising a second switch core (see FIG. 2, Background switch fabric 126);

a sender switch port interface unit (see FIG. 1, Input of I/O module #1);

plural receiver switch port interface units (see FIG. 1, Output of I/O module #1-N), and

wherein the sender switch port interface unit applies maintenance cells (see FIG. 2, and col. 5, lines 52 to col.6, lines 32; note that communication cell and the test cell are the

maintenance/OAM cells.) to the plural receiver switch port interface units in a cycle (see FIG. 1, I/O module #1-N, and FIG. 2, TSSP 28 and FSSP 30; note that each I/O module is coupled to both switch fabrics, and the OAM cells are switched between I/O modules. Thus, one TSPP must be able to send a communication cell to FSPP of the I/O module#1 and a test cell to the other FSPP of I/O module#2. Also, note that the OAM cells are transmitted/received between every input and output once every 5 milliseconds time cycle.), the cycle comprising:

(1) non-inverted maintenance cells (FIG. 2, and col. 5, lines 52 to col.6, lines 32; a communication cell) sent via the first switch plane to each of the plural receiver switch port interface units (see FIG. 1, Foreground Switch Fabric controller 24 and port processor 20; see col. 4, lines 36 to col. 5, lines 65; note that a foreground switch fabric controller maintain the topology of multipoint connection. Thus, communication cells are sent between I/O modules via foreground switch plane in order to establish the connection.)

(2) non-inverted maintenance cells (see FIG. 2, and col. 5, lines 52 to col.6, lines 32; a communication cell) sent via the second switch plane to each of the plural receiver switch port interface units (see col.4, lines 24-30; note that both foreground and background are interchangeable modules; thus, they must have the same functionality, and the disclosures that are applicable to foreground control module 10 is also applicable to background module 12. Also, see col. 4, lines 36 to col. 5, lines 65; note that a switch control module Background maintain the topology of multipoint connection. Thus, communication cells are sent between I/O modules via background switch plane in order to establish the connection);

(3) inverted maintenance cells (see FIG. 2, col. 6, lines 16-32; a test cell) sent via the first switch plane to each of the plural receiver switch port interface units (see FIG. 1, Foreground Switch Fabric controller 24 and port processor 20; see col. 4, lines 36 to col.6, lines 32; note that a foreground switch fabric controller maintain the topology of multipoint connection. Thus, test cells are sent between I/O modules via foreground switch plane.); and

(4) inverted maintenance cells (see FIG. 2, col. 6, lines 16-32; a test cell) sent via the second switch plane to each of the plural receiver switch port interface units (see col.4, lines 24-30; note that both foreground and background are interchangeable modules; thus, they must have the same functionality, and the disclosures that are applicable to foreground control module 10 is also applicable to background module 12. Also, see col. 4, lines 36 to col.6, lines 32; note that a switch control module Background maintains the topology of multipoint connection. Thus, test cells are sent between I/O modules via background switch plane.),

the inverted maintenance cells having at least a portion thereof inverted with respect to the corresponding non-inverted cell of the cycle (FIG. 2, col. 6, lines 16-32; a test cell must have an inverted code compare to a code of communication cell). Note that a cell switch is the ATM switch, which utilizes ATM cells formats; see col. 5, lines 15-19. Also, note that it is well known in the art that ATM standard header consists of payload type (PT) field where PT coding contains various coding formats for OAM cell in order to identify different types of OAM cells. Thus, it is clear that when a pair of OAM cells (i.e. communication and test cells) is transmitted to the foreground/background switch fabric, a

different PT field code must be used (i.e. by inverting PT codes). Thus, at least a portion of communication cells is non-inverted, and at least a portion of test cell is inverted.

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

2. Claims 3 and 13 are rejected under 35 U.S.C. 103(a) as being unpatentable over Manning'427 in view of Uchida (U.S. 5,313,453).

Regarding claims 3 and 13, Manning'427 discloses wherein the maintenance cell informs the receiver switch port interface unit regarding the communication error/failure in switching fabrics as described above in claim 1 and 11.

Manning'427 does not explicitly disclose wherein the maintenance cell includes a plane indicator, which informs the receiver switch port interface unit whether the maintenance cell traveled through the first switch plane or the second switch plane.

However, the above-mentioned claimed limitations are taught by Uchida'453. In particular, Uchida'453 teaches wherein the maintenance cell (see FIG. 8B, Test cell) includes a plane indicator (see FIG. 8B, Tag Data 804 for each stage switch) which informs the receiver switch port interface unit (see FIG. 6, Output trunk 110) whether the maintenance cell traveled through the first switch plane (see FIG. 6, SRM 107 and see FIG. 10, SRM

1001-1-1) or the second switch plane (see FIG. 6, SRM 107; FIG. 10, SRM 1001-2-1; see col. 3, line 20 to col. 55; note that each test cell with a tag for each switch stage is received at the output trunk. The tag identifies the switching stage ID where the test cell is routed.)

In view of this, having the system of Manning'427 and then given the teaching of Uchida'453, it would have been obvious to one having ordinary skill in the art at the time the invention was made to modify the system of Manning'427, by providing a test cell with a tag ID for each switch stage, as taught by Uchida'453. The motivation to combine is to obtain the advantages/benefits taught by Uchida'453 since Uchida'453 states at col. 5, line 15-25 that such modification would detects the error/faults by efficiently testing all paths configured by respective switches.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Ian N Moore whose telephone number is 703-605-1531. The examiner can normally be reached on M-F: 9-5.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Ricky Ngo can be reached on 703-305-4798. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

INM
2/13/04

RICKY NGO
PRIMARY EXAMINER